and B, A' ended

$$\sum_{k=1}^{K}\omega_{ik}=\mu_i,\ 1\le i\le N,\ \sum_{l=1}^{N}\omega_{ik}=\gamma_k,\ 1\le k\le K.$$

2. The method according to claim 1 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

and B, A'

3. The method according to claim 1 wherein the element distance between the first and second probability distance functions is a Kullback Leibler Distance.

4. The method of claim 1 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

B

5. A computer program embedded in a storage medium for computing a distance measure between first and second mixture type probability distribution functions, $G(x)=\sum_{l=1}^{N}\mu_i g_i(x)$, and $H(x)=\sum_{k=1}^{K}\gamma_k h_k(x)$, pertaining to audio data, the improvement comprising a software module that evaluates said distance measure in accordance with equation:

$$D_M(G,H)=\min_{w=[\omega_{ik}]}\sum_{l=1}^{N}\sum_{k=1}^{K}\omega_{ik}d(g_i,h_k),$$

where $d(g_i, h_k)$ is a function of distance between a component, g_i, of the first probability distribution function and a component, h_k, of the second probability distribution function where

and B,

$$\sum_{l=1}^{N}\mu_i=1\ \ and\ \sum_{k=1}^{K}\gamma_k=1,$$

and

$$\omega_{ik}\ge 0,\ 1\le i\le N,\ 1\le k\le K,$$

and

$$\sum_{k=1}^{K}\omega_{ik}=\mu_i,\ 1\le i\le N,\ \sum_{i=1}^{N}\omega_{ik}=\gamma_k,\ 1\le k\le K.$$

6. The computer program according to claim 5 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

7. The computer program according to claim 5 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

8. The computer program of claim 5 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

9. A computer system for computing a distance measure between first and second mixture type probability distribution functions, $G(x)=\sum_{l=1}^{N}\mu_l g_l(x)$, and $H(x)=\sum_{k=1}^{K}\gamma_k h_k(x)$, pertaining to audio data comprising:

memory for storing said audio data;

a processing module for deriving one of said mixture type probability distribution functions from said audio data; and

a processing module for evaluating said distance measure in accordance with

$$D_M(G,H)=\min_{w=[\omega_{ik}]}\sum_{i=1}^{N}\sum_{k=1}^{K}\omega_{ik}d(g_i,h_k),$$

where $d(g_i, h_k)$ is a function of the distance between a component, g_i, of the first probability distribution function and a component, h_k, of the second probability distribution function,

where

$$\sum_{l=1}^{N}\mu_l=1 \ and \ \sum_{k=1}^{K}\gamma_k=1,$$

and

$$\omega_{ik}\geq 0,\ 1\leq i\leq N,\ 1\leq k\leq K,$$

and

$$\sum_{k=1}^{K}\omega_{ik} = \mu_i,\ 1 \le i \le N,\ \sum_{i=1}^{N}\omega_{ik} = \gamma_k,\ 1 \le k \le K.$$

10. The computer system according to claim 9 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

11. The computer system according to claim 9 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

12. The computer system of claim 9 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

13. A method for computing a distance measure ~~between a mixture-type-probability~~ distribution function $G(x) = \sum_{i=1}^{N}\mu_i g_i(x)$, where μ_i is a weight imposed on component, $g_i(x)$, and a mixture type probability distribution function $H(x) = \sum_{k=1}^{K}\gamma_k h_k(x)$, where γ_k is a weight imposed on component h_k comprising the steps of:

A5

computing an element distance, $d(g_i, h_k)$, between each g_i and each h_k where $1 \le i \le N, 1 \le k \le K$,

computing an overall distance, denoted by $D_M(G,H)$, between the mixture probability distribution function G, and the mixture probability distribution function H, based on a weighted sum of the all element distances,

$$\sum_{i=1}^{N}\sum_{k=1}^{K}\omega_{ik} d(g_i, h_k),$$

and B,

wherein weights $\omega_{i,k}$ imposed on the element distances $d(g_i, h_k)$, are chosen so that the overall distance $D_M(G,H)$ is minimized, subject to

$$\omega_{ik} \ge 0,\ 1 \le i \le N,\ 1 \le k \le K$$